

Trend Study 18-34-02

Study site name: Three O'Clock.

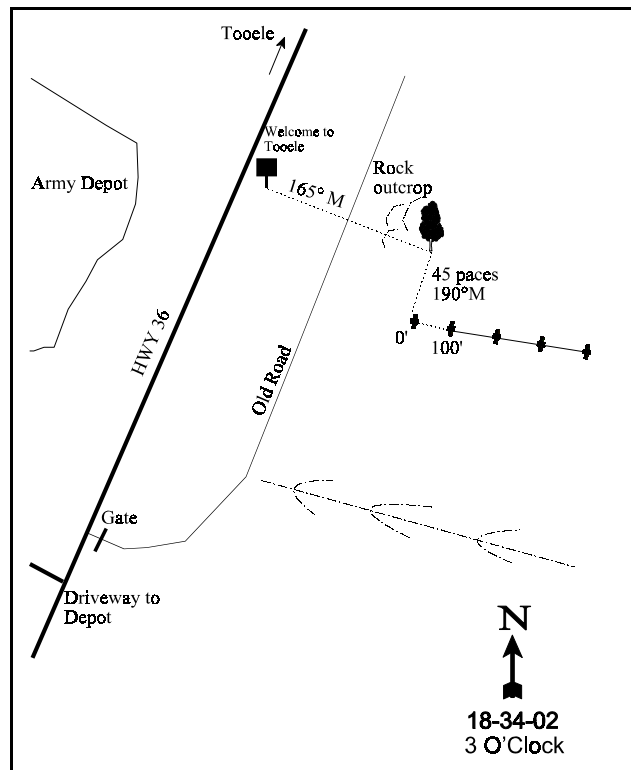
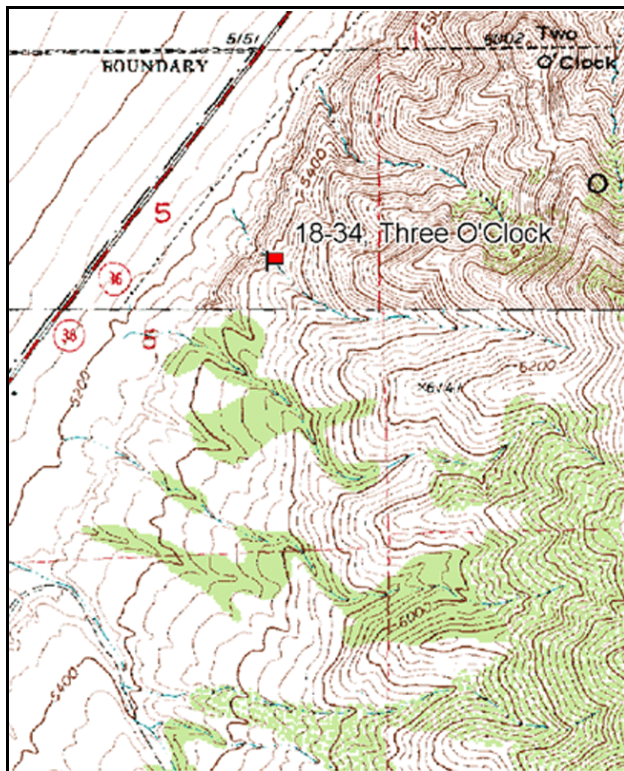
Vegetation type: Mountain Big Sagebrush.

Compass bearing: frequency belt ~120 degrees magnetic.

Frequency belt placement: line 1 (11ft & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

Park at the "Welcome to Tooele" sign south of Tooele. It is across from the army depot. From the sign walk at 165 degrees magnetic to a rock outcrop with a lone juniper. From the lone juniper, go 45 paces at 190 degrees magnetic to a rock cairn or the 0-foot stake.



Map name: Tooele

Diagrammatic Sketch

Township 3S, Range 4W, Section 33

GPS: NAD 27, UTM 12S 4483993 N 388442 E

DISCUSSION

Three O'Clock - Trend Study No. 18-34

This is a new trend study established to monitor deer and elk winter range east of highway 36 between Tooele and Stockton. It samples a mountain big sagebrush bench on the Bonneville lake terrace. The site has a west aspect and a 10% slope at an elevation of about 5,400 feet. The whole area appears to have burned sometime in the late 1980's but now supports a healthy stand of mountain big sagebrush. The vicinity is used heavily by deer and elk primarily in the winter and early spring. Pellet group transect data from 2002 estimated 30 deer and 43 elk days use/acre (74 ddu/ha and 106 edu/ha). Some of the deer pellet groups may be from antelope which also use the area. Cattle also graze the site with use estimated at 13 days use/acre (32 cdu/ha).

Soil at the site is shallow and very rocky on the surface and especially within the profile. Effective rooting depth was estimated at only 9 inches. Soil depth is obviously deeper but deeper soil penetrometer readings were not possible due to the rocky nature of the soil profile. Texture is a sandy clay loam with a slightly acidic reaction (pH 6.4). There is little exposed bare ground on the site primarily due to the abundance of bulbous bluegrass. Protective ground cover is abundant and erosion minimal. The erosion condition class was determined as stable in 2002.

The site supports a vigorous stand of mostly mature mountain big sagebrush, estimated at 6,480 plants/acre in 2002. Mountain big sagebrush on this site is rather low growing averaging only 15 inches in height. They display moderate to heavy use, good vigor and low decadence. Annual leader growth was estimated at 1.4 inches. The only other common shrub found on the site was broom snakeweed which had a density of 3,320 plants/acre. There are a few very heavily hedged bitterbrush and serviceberry scattered around the site but none occurred within the sample.

The herbaceous understory is diverse and produces a high amount of cover. However, 92% of the grass cover or 83% of the total herbaceous cover comes from the low value perennial, bulbous bluegrass. It has a very high cover value of 36%. Bulbous bluegrass provides little forage and dries out completely by early summer. The only other common grasses include purple threeawn and cheatgrass. Forbs are diverse with 22 species sampled in 2002. The most common species sampled include silky milkvetch, redroot eriogonum, and sunflower.

2002 APPARENT TREND ASSESSMENT

Soil on the site is well protected and erosion is minimal. The soil erosion condition class was determined as stable in 2002. The site supports a healthy and vigorous stand of mountain big sagebrush. Utilization is moderate to heavy but vigor is good and there are few decadent plants. The population is mostly mature but should remain at a stable density in the absence of disturbance. The herbaceous understory is abundant and diverse but composition is poor with bulbous bluegrass accounting for 92% of the total grass cover or 83% of the total herbaceous cover. This poor value perennial is low growing, provides little forage, and dries out completely in early summer.

HERBACEOUS TRENDS --
Herd unit 18 , Study no: 34

T y p e	Species	Nested Frequency '02	Quadrat Frequency '02	Average Cover % '02
G	Agropyron spicatum	4	1	.01
G	Aristida purpurea	94	45	1.69
G	Bromus tectorum (a)	227	78	.95
G	Poa bulbosa	470	99	35.82
G	Poa secunda	29	13	.14
G	Sitanion hystrix	3	2	.18
G	Sporobolus cryptandrus	5	4	.07
G	Vulpia octoflora (a)	1	1	.00
Total for Annual Grasses		228	79	0.96
Total for Perennial Grasses		605	164	37.91
Total for Grasses		833	243	38.87
F	Alyssum alyssoides (a)	15	5	.02
F	Antennaria rosea	2	1	.03
F	Astragalus cibarius	53	27	1.23
F	Asclepias spp.	1	1	.15
F	Astragalus utahensis	5	3	.09
F	Castilleja linariaefolia	7	5	.41
F	Calochortus nuttallii	17	13	.06
F	Cirsium spp.	22	10	.50
F	Crepis acuminata	21	10	.18
F	Epilobium brachycarpum (a)	3	1	.00
F	Erodium cicutarium (a)	25	11	.13
F	Eriogonum racemosum	40	22	.21
F	Gilia spp. (a)	1	1	.00
F	Helianthus annuus (a)	137	63	.33
F	Heterotheca villosa	7	4	.31
F	Holosteum umbellatum (a)	1	1	.00
F	Petradoria pumila	2	1	.00
F	Phlox hoodii	3	1	.03
F	Phlox longifolia	24	11	.08
F	Polygonum douglasii (a)	10	5	.02
F	Tragopogon dubius	21	14	.12
F	Zigadenus paniculatus	22	12	.39
Total for Annual Forbs		192	87	0.53
Total for Perennial Forbs		247	135	3.81
Total for Forbs		439	222	4.34

BROWSE TRENDS --

Herd unit 18 , Study no: 34

Type	Species	Strip Frequency	Average Cover %
		'02	'02
B	Artemisia tridentata vaseyana	84	14.41
B	Chrysothamnus nauseosus albicaulis	3	.06
B	Gutierrezia sarothrae	66	.86
B	Opuntia spp.	3	.00
B	Tetradymia canescens	5	.03
Total for Browse		161	15.37

Key Browse Annual Leader Growth

Herd unit 18 , Study no: 34

Species	Average leader growth (in) '02
Artemisia tridentata vaseyana	1.4

BASIC COVER --

Herd unit 18 , Study no: 34

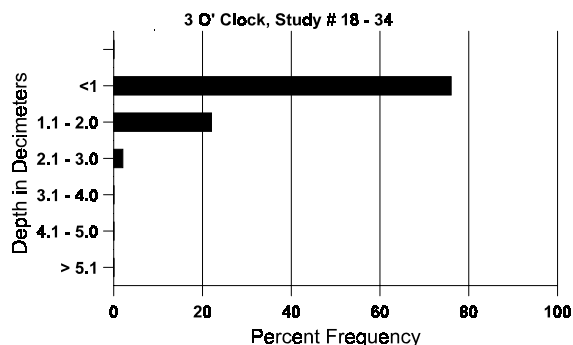
Cover Type	Nested Frequency	Average Cover %
	'02	'02
Vegetation	484	61.09
Rock	316	13.46
Pavement	389	9.80
Litter	452	24.87
Cryptogams	127	3.27
Bare Ground	240	6.83

SOIL ANALYSIS DATA --

Herd Unit 18, Study no: 34, Three O'Clock

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
8.9	N/A	6.4	46.9	24.4	28.7	2.7	20.7	518.4	0.8

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 18 , Study no: 34

Type	Quadrat Frequency	Pellet Transect	
		Pellet Groups per Acre	Days Use per Acre (ha)
	'02	02	02
Elk	27	557	43 (116)
Deer	24	392	30 (74)
Cattle	2	157	13 (32)

BROWSE CHARACTERISTICS --

Herd unit 18 , Study no: 34

Total ant 10, Study No. 2																		
A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia tridentata vaseyana																		
S	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
Y	02	3	1	-	-	-	-	-	-	-	4	-	-	-	80		4	
M	02	51	121	125	-	-	-	-	-	-	297	-	-	-	5940	15 24	297	
D	02	15	6	2	-	-	-	-	-	-	15	-	3	5	460		23	
X	02	-	-	-	-	-	-	-	-	-	-	-	-	-	520		26	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'02		40%			39%			02%										
Total Plants/Acre (excluding Dead & Seedlings)												'02	6480	Dec:	7%			
Chrysothamnus nauseosus albicaulis																		
M	02	1	1	1	-	-	-	-	-	-	3	-	-	-	60	10 9	3	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'02		33%			33%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'02	60	Dec:	-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Gutierrezia sarothrae																		
S	02	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
Y	02	5	-	-	-	-	-	-	-	-	5	-	-	-	100		5	
M	02	146	-	-	-	-	-	-	-	-	146	-	-	-	2920	6	7	146
D	02	15	-	-	-	-	-	-	-	-	10	-	-	5	300		15	
X	02	-	-	-	-	-	-	-	-	-	-	-	-	-	320		16	
% Plants Showing '02		<u>Moderate Use</u> 00%			<u>Heavy Use</u> 00%			<u>Poor Vigor</u> 03%			<u>%Change</u>							
Total Plants/Acre (excluding Dead & Seedlings)												'02	3320	Dec:	9%			
Opuntia spp.																		
Y	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
M	02	2	-	-	-	-	-	-	-	-	2	-	-	-	40	5	12	2
% Plants Showing '02		<u>Moderate Use</u> 00%			<u>Heavy Use</u> 00%			<u>Poor Vigor</u> 00%			<u>%Change</u>							
Total Plants/Acre (excluding Dead & Seedlings)												'02	60	Dec:	-			
Purshia tridentata																		
S	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
M	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	22	57	0
X	02	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing '02		<u>Moderate Use</u> 00%			<u>Heavy Use</u> 00%			<u>Poor Vigor</u> 00%			<u>%Change</u>							
Total Plants/Acre (excluding Dead & Seedlings)												'02	0	Dec:	-			
Tetradymia canescens																		
M	02	4	1	-	-	-	-	-	-	-	5	-	-	-	100	15	22	5
X	02	-	-	-	-	-	-	-	-	-	-	-	-	-	60		3	
% Plants Showing '02		<u>Moderate Use</u> 20%			<u>Heavy Use</u> 00%			<u>Poor Vigor</u> 00%			<u>%Change</u>							
Total Plants/Acre (excluding Dead & Seedlings)												'02	100	Dec:	-			